Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/AU04/001643

International filing date: 03 December 2004 (03.12.2004)

Document type: Certified copy of priority document

Document details: Country/Office: AU
Number: 2003906717
Filing date: 05 December 2003 (05.12.2003)

Date of receipt at the International Bureau: 04 January 2005 (04.01.2005)

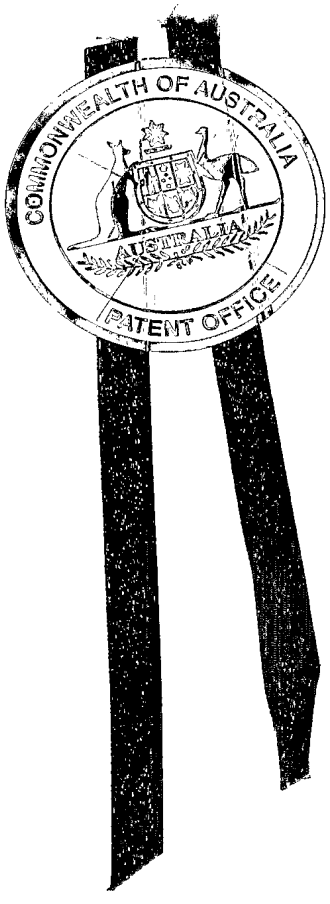
Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)

Australian Government

Patent Office
Canberra

I, JANENE PEISKER, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003906717 for a patent by OCTA PTY LTD as filed on 05 December 2003.

I further certify that the above application is now proceeding in the name of PRECURSOR ENGINEERING PTY LTD pursuant to the provisions of Section 113 of the Patents Act 1990.



WITNESS my hand this
Seventeenth day of December 2004

JANENE PEISKER
TEAM LEADER EXAMINATION
SUPPORT AND SALES

APPLICANT: OCTA PTY LTD
ANC 008 990 001

NUMBER:

FILED:

AUSTRALIA

THE PATENTS ACT 1990

PROVISIONAL SPECIFICATION FOR THE INVENTION ENTITLED

"PHOTOELECTRIC MOTOR"

The invention is described in the following statement:

The present invention relates to a direct current (dc) Photon Electric Motor.

With presently known dc electric motors the ratio of current used to mechanical power output is rather low, while the heat build up is high. It is a known fact that back emf is the main contributing factor to the poor efficiency and the high heat build up in such dc type electric motors.

The present invention uses the effects of back emf to great advantage, while reducing the heat build up.

In accordance with one aspect of the present invention there is provided a dc photon electric motor, having a shaft with a fixed multi poled rotor attached, a rotor coil, brushes, slip rings, a stator ring with multi stators, stator coils, a timing wheel, photo electric timing sensors, electronic switches, wiring, bearings and motor casings.

The present invention will now be described by way of example with reference to the accompanying drawings, in which:-

Figure 1 is a back perspective view of a photon electric motor in accordance with the present invention (less the bearings, electronic switch sets, wiring and casing).

Figure 2 is a front perspective view of a photon electric motor in accordance with the present invention (less bearings, electronic switch sets, wiring and casing)

Figure 3 is a perspective view of the rotor.

Figure 4 is a front view of the rotor.

Figure 5 is a front view of rotor and timing wheel in position (A)

Figure 6 is a front view of rotor and timing wheel in position (B)

Figure 7 is a front view of rotor and timing wheel in position (C)

Figure 8 is a front view of rotor and timing wheel in position (D)

Figure 9 is a perspective view of stator ring, stators and stator coils

Figure 10 is a front view of stator ring, stators and stator coils.

In the drawings there is shown a photon electric motor with a shaft 1, a rotor 2 having a number of fixed magnetic poles 16a, 16b, 16c, 16d, 16e, 16f, 17a, 17b, 17c, 17d, 17e, 17f.

Also shown is a stator ring 3, stators 4a - 4l, stator coils 5a - 5l, slip rings 6a and 6b, brushes 7a and 7b (not visible), brush assembly 8, timing wheel 9, timing tags 10a - 10f, photo electric sensors 11a and 11b. Included (but not shown in drawings), a rotor coil 12, bearings 13a and 13b, motor casings 14a and 14b, wiring 15, electronic switch sets 18a and 18b, a dc power source 19.

In accordance with one aspect of the present invention there is provided a photon electric motor having a least two electronic switch sets 18a and 18b. Direct current from the power source 19, is passed through these two electronic switch sets 18a, 18b, switching both leads to and from the stator coils 5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j, 5k, 5l .

Stator coils 5a, 5c, 5e, 5g, 5i, 5k, have their windings in a clockwise direction, and stator coils 5b, 5d, 5f, 5h, 5j, 5l, have their windings in an anti clockwise direction. Stator coils maybe connected in circuit to each other "parallel", or in "series".

A switch set 18a, is wired to deliver dc current from power source 19, through stator coils 5a - 5l in the forward direction, and a switch set 18b, is wired to deliver dc current from power source 19 through stator coils 5a - 5l, in the reverse direction.

Current from dc power source 19 is also fed through the rotor coil 12, via an appropriate circuit through brush assembly 8 and slip rings 6a and 6b. In operation the rotor has six

constant "north" poles 16a, 16b, 16c, 16d, 16e, 16f and six constant "south" poles 17a, 17b, 17c, 17d, 17e, 17f. (Figure 4)

Direct current from power source 19 is also fed via an appropriate circuit through the photoelectric sensors 11a and 11b, and then (at the correct timing) to the electronic switch sets 18a or 18b, to turn them on and off, powering stator coils 5a - 5l.

In one aspect of the current invention there is provided a photon electric motor with twelve stator poles 4a - 4l and twelve rotor poles 16a - 16f and 17a - 17f. In operation, six cycles are performed by the stator coils 5a - 5l, each revolution of the shaft 1 and rotor 2. Each cycle then is made up of four parts, all equal in time duration, they being: -

(A.) Direct current from power source19 is fed through switch set 18a to stator coils 5a - 5l in the forward direction, magnetizing stators 4a - 4l. (Figure 5)

(B.) Direct current from power source 19 fed through switch set 18a to stator coils 5a - 5l is turned off, demagnetizing stators 4a - 4l. (Figure 6)

(C.) Direct current from power source 19 is fed through switch set 18b to stator coils 5a -5l in the reverse direction, magnetizing stators 4a - 4l in the opposite order of polarity. (Figure 7)

(D.) Direct current from power source 19 fed through switch set 18b to stator coils 5a - 5l is turned off, demagnetizing stators 4a - 4l. (Figure 8)

During one complete cycle, the voltage on the stator coils 5a - 5l, rises from 0 volts to + volts, falls back to 0 volts, then falls to - volts and then rises again to 0 volts.

The photon electric motor in operation is at positions A, (Figure 5) when current from dc power source 19 is turned on, current is now available to electronic switch sets 18a, 18b. Current from dc power source 19 now flows through rotor coil 12 via brush assembly 8

and slip rings 6a, 6b to energize the rotor coil 12 and rotor magnetic poles. Rotor poles 16a - 16f are energized permanent north, while rotor poles 17a - 17f are energized permanent south. (Figure 4).

Current from dc power source 19 also flows through photoelectric sensors 11a, 11b. (Figure 5). Light from photoelectric sensor 11a, is reflected back to 11a from timing wheel tag 10a (Figure 5), closing the internal circuit of photoelectric sensor 11a, sending current to electronic switch set 18a. Upon closing it's internal circuit, and in turn allowing the forward direction current from dc power source 19 to flow through stator coils 5a - 5l, charging them to + volts. Stator coils 5a, 5c, 5e, 5g, 5i, 5k are energized to produce north pole stators, while stator coils 5b, 5d, 5f, 5h, 5j, 5l are energized to produce south pole stators. (Figure 4,5)

At position A (Figure 5) stators 4a - 4l, having their coils energized, begin to oppose the rotor poles 16a - 16f and 17a - 17f, and induces rotor 2 to move in a clockwise direction. When rotor 2 reaches position B (Figure 6) current from photoelectric sensor 11a is turned off, circuits to electronic switch set 18a, and to stator coils 5a - 5l are opened and current flow from dc power source 19 through them ceases. Back emf then continues to energize stator coils 5a - 5l, until their voltage drops to 0 volts. Rotor poles 17a - 17f, 16a - 16f, meanwhile are attracted to the stator poles 4a - 4l inducing the rotor 2 to continue in it's clockwise direction between position B (Figure 6) and position C (Figure 7).

Upon the rotor 2 and timing wheel tab 10a reaching position C, (Figure 7) the timing photoelectric sensor 11b, is turned on. Current from dc power source 19 flows to electronic switch set 18b closing it's internal circuit to enable current from dc power

source 19, to flow through the stator coils 5a - 5l in the reverse direction charging them to - volts and inducing a reverse order of polarity within stators 4a - 4l. Rotor poles 17a - 17f, 16a - 16f, now being opposed by stators 4a - 4l, continue to move in a clockwise direction away from the opposing stators 4a - 4l.

When rotor 2 reaches position D (Figure 8) current from photoelectric sensor 11a is turned off, circuits to electronic switch set 18b, and to stator coils 5a - 5l are opened and current flow from dc power source 19 through them ceases. Back emf then continues to energize stator coils 5a - 5l, until their voltage rises to 0 volts. Rotor poles 16a - 16f, 17a - 17f, meanwhile are attracted to the stator poles 4a - 4l inducing the rotor 2 to continue in it's clockwise direction between position D (Figure 8) and position E, where the cycle repeats itself.

Modifications and variations such as would be apparent to skilled addressee are deemed within the scope of the present invention. For example, the electrically powered rotor may have its coil replaced by permanent type magnets to induce a magnetic flux upon its poles. Further, the number of stator and rotor poles maybe varied. Though in accordance with one aspect of this present invention, single-phase current is induced into stator coils, however multiple phases are also deemed within the scope of this present invention.

DATED THIS 5TH DAY OF DECEMBER 2003

OCTA PTY LTD

48 BUCKTIN STREET
COLLIE, WESTERN AUSTRALIA 6225

FIG.1

Back Perspective View

Motor (less bearings, wiring & casings)

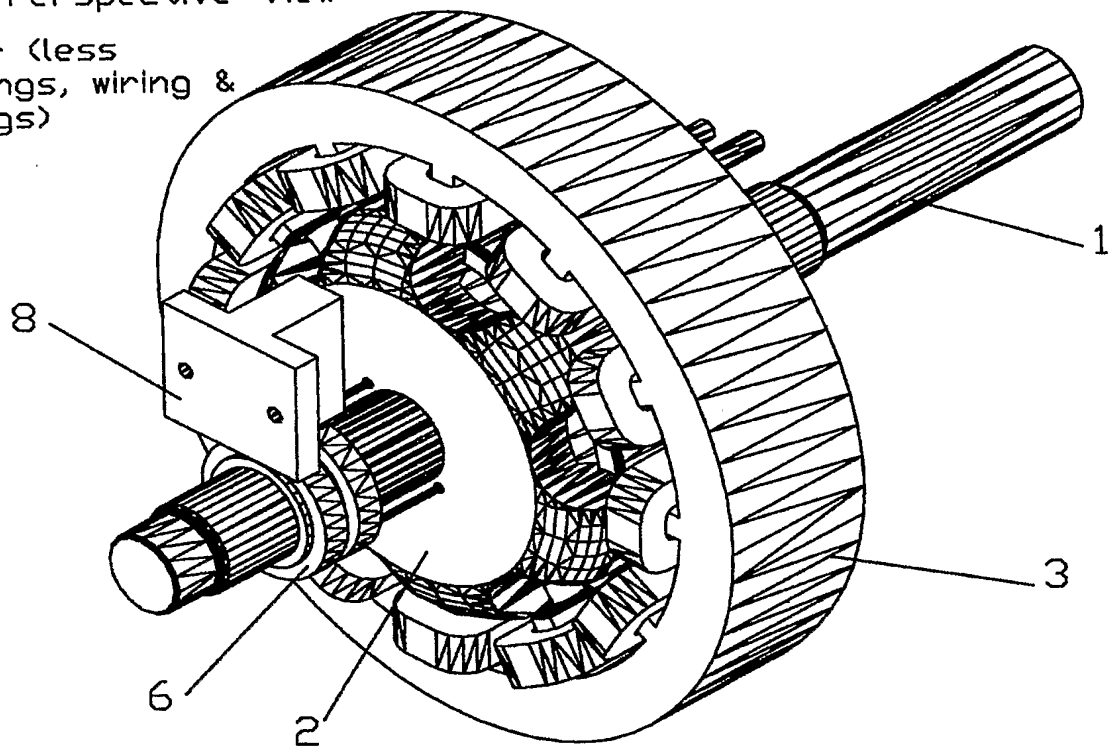


FIG.2

Front Perspective View

Motor (less bearings, wiring & casings)

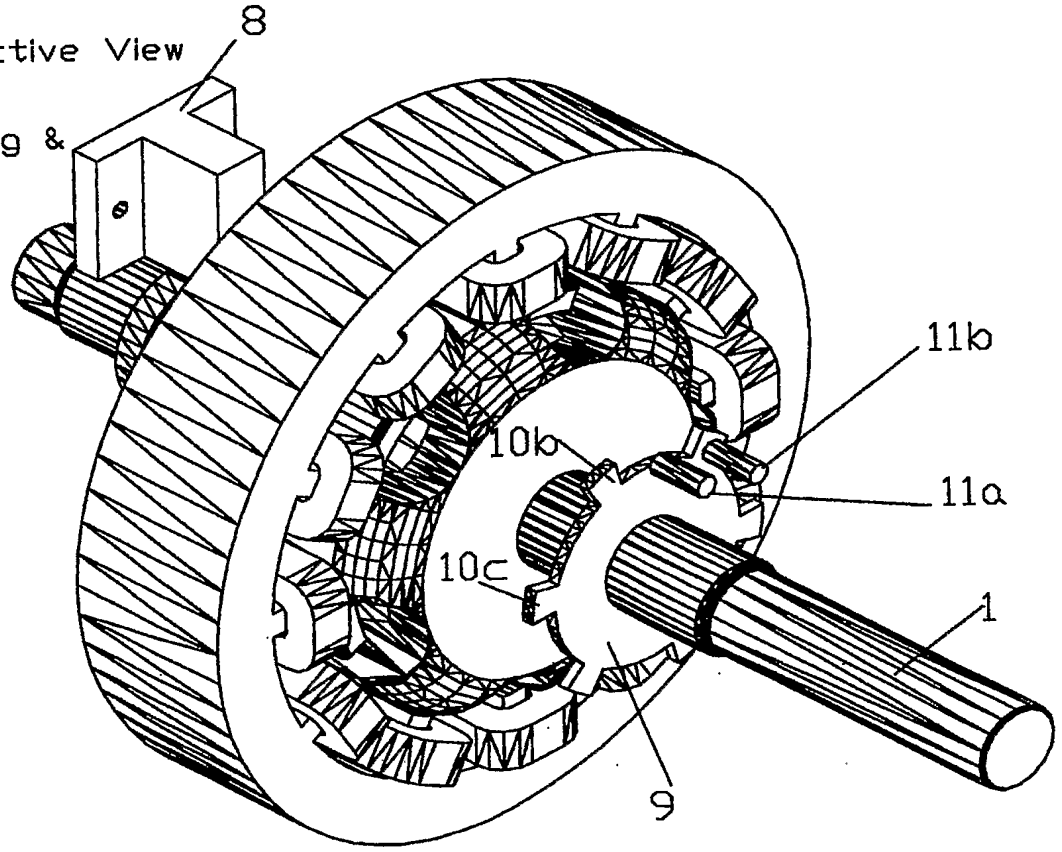


FIG.3

Perspective View

Rotor

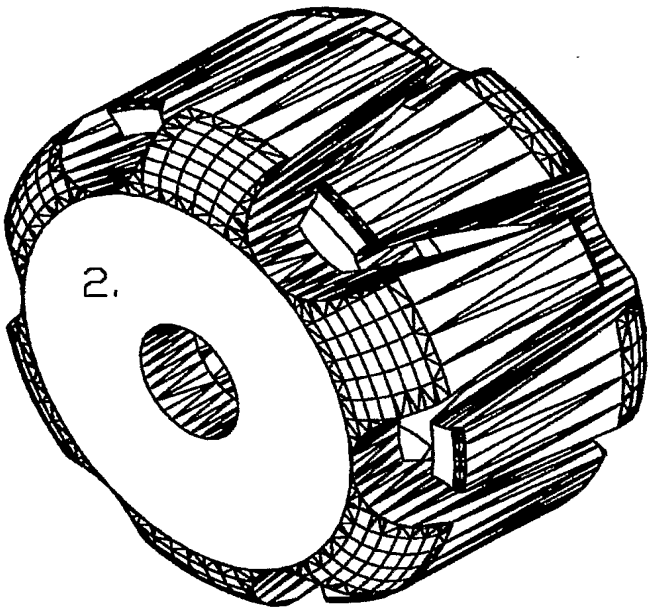


FIG.4

Front View

Rotor

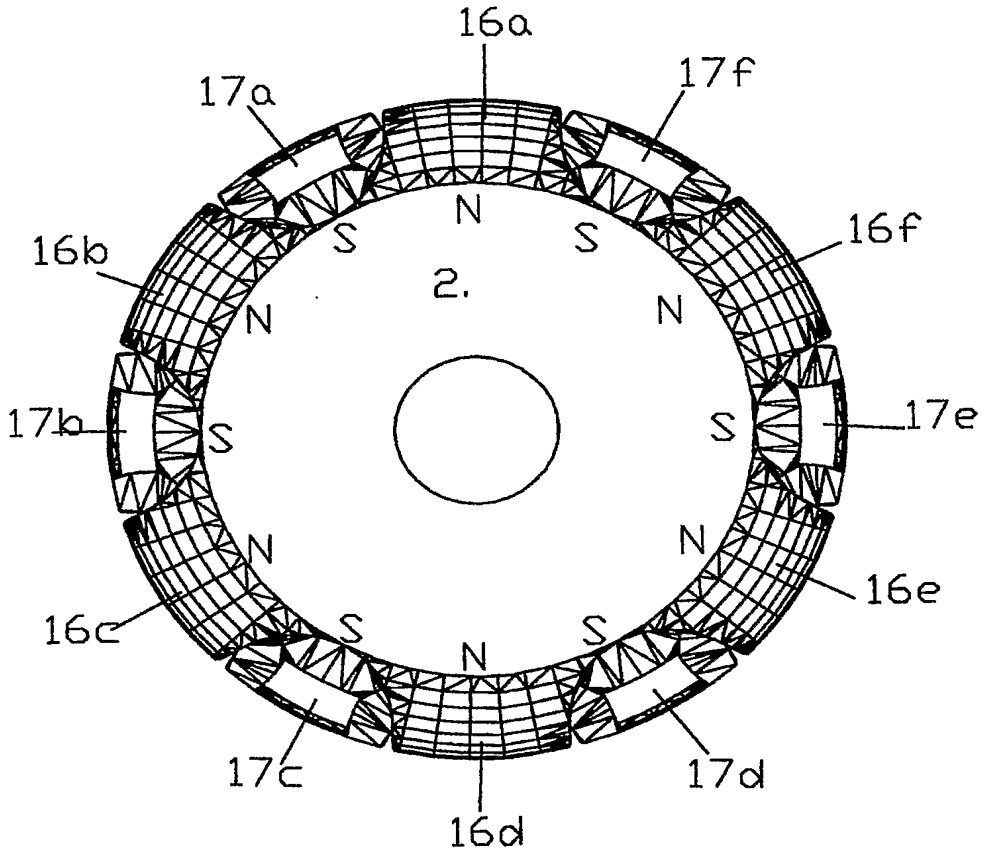


FIG.5

Rotor & Timing Wheel
position (A)

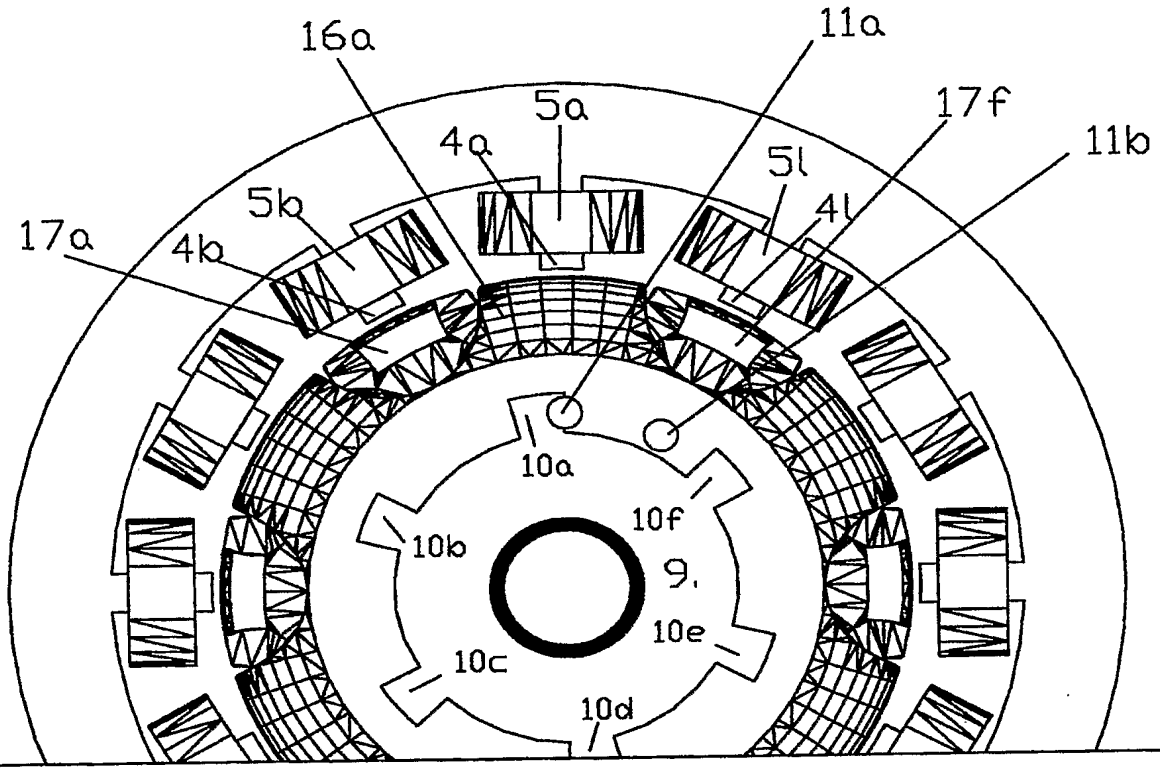


FIG.6

Rotor & Timing Wheel
position (B)

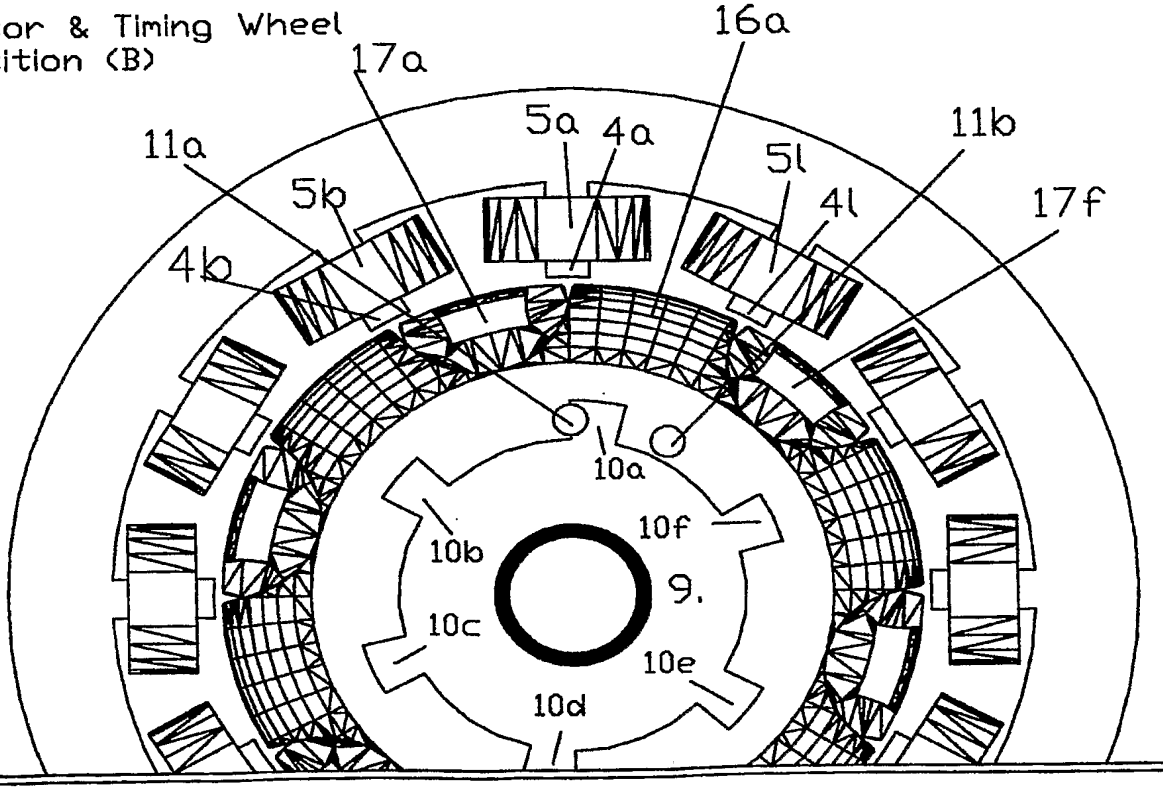


FIG.7

Rotor & Timing Wheel
position (C)

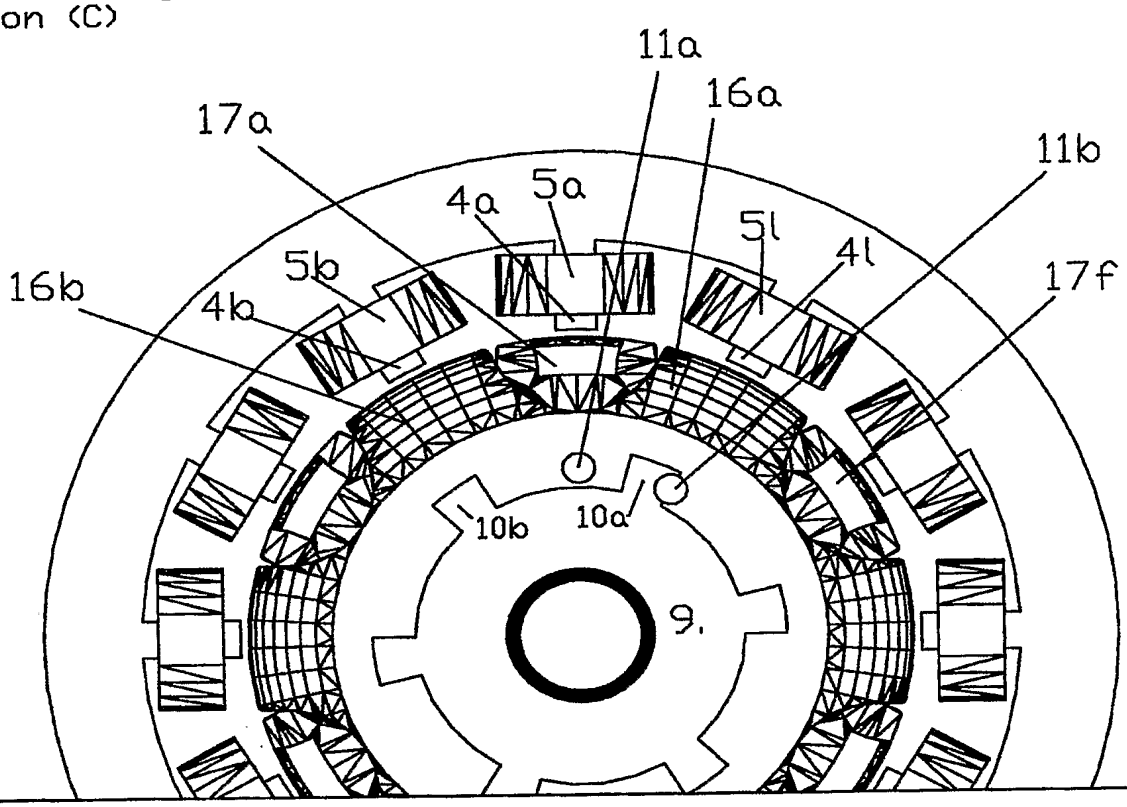


FIG.8

Rotor & Timing Wheel
position (D)

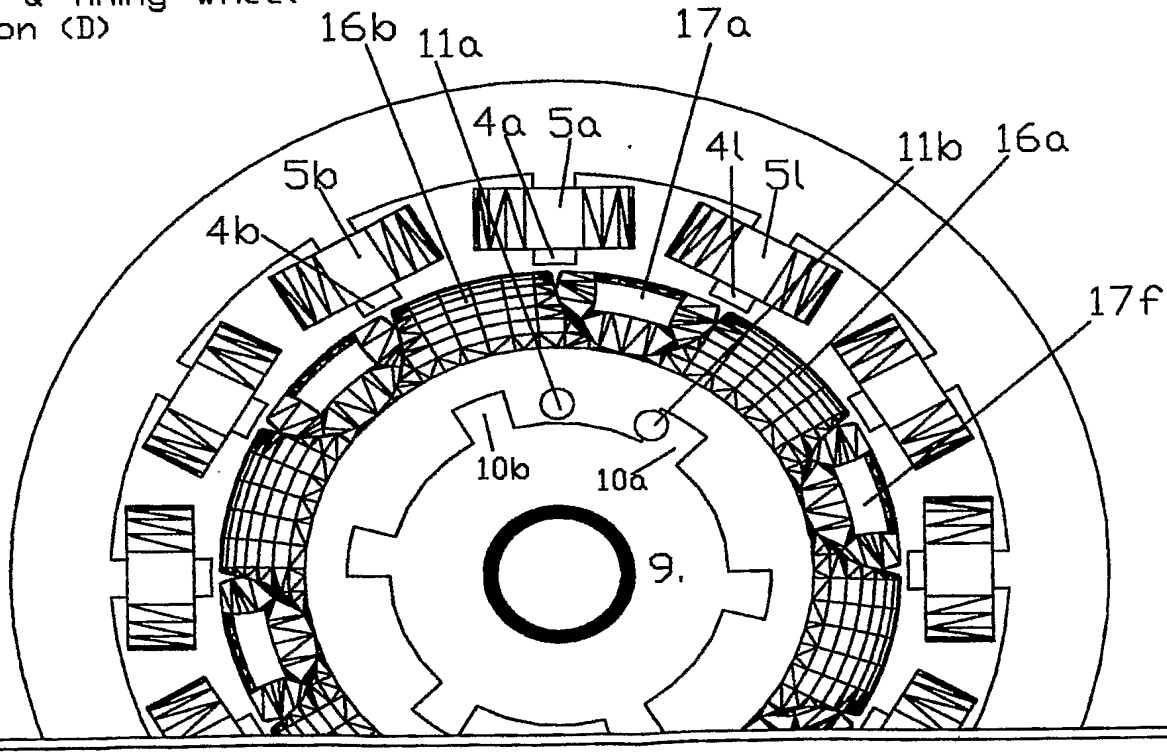


FIG.9

Perspective View

Stator Ring & coils

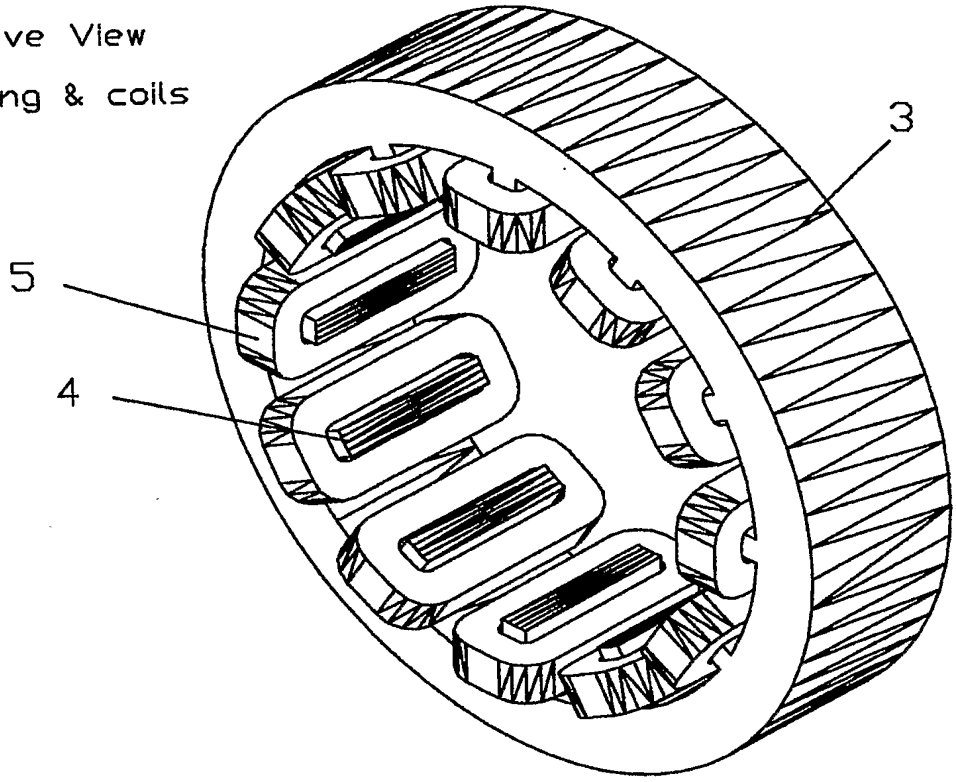


FIG.10

Front View

Stator Ring & Coils